=> FILE REG
FILE 'REGISTRY' ENTERED AT 13:57:00 ON 25 JUL 2007

=> D HIS

FILE 'HCAPLUS' ENTERED AT 13:40:48 ON 25 JUL 2007
L1 39730 S HASEGAWA ?/AU
L2 12253 S IZUMI ?/AU
L3 1606 S SHIOHARA ?/AU
L4 13097 S SUGAWARA ?/AU
L5 9305 S HIRAYAMA ?/AU
L6 3770 S OBA ?/AU
L7 643 S IKUHARA ?/AU
L8 6 S L1 AND L2 AND L3 AND L4 AND L5 AND L6 AND L7
SEL L8 2 RN

FILE 'REGISTRY' ENTERED AT 13:42:00 ON 25 JUL 2007
L9 3 S E1-E3
SEL L9 2 RN
L10 1 S E4

FILE 'HCA' ENTERED AT 13:43:05 ON 25 JUL 2007
L11 1935 S L10 OR BAZRO3 OR ZRBAO3

FILE 'REGISTRY' ENTERED AT 13:43:11 ON 25 JUL 2007
L12 24315 S (BA (L) CU (L) O)/ELS
L13 12248 S L12 AND LNTH/PG
L14 2940 S L13 AND 4/ELC.SUB
L15 856 S L13 AND SM/ELS
L16 208 S L15 AND L14

FILE 'HCA' ENTERED AT 13:47:04 ON 25 JUL 2007
L17 1342 S L16
L18 9416 S L14
L19 273769 S SINGLE?(2A)CRYST?
L20 295849 S THINFILM? OR THIN?(2A)FILM?
L21 195027 S SUPERCOND? OR SUPER(2A)(COND# OR CONDUCT?)
L22 20 S L11 AND L17
L23 17 S L22 AND (L19 OR L20 OR L21)
L24 70 S L11 AND L18

L25 15 S L24 AND L19
L26 5 S L24 AND L20
L27 60 S L24 AND L21
L28 15 S (L25 OR L26) AND L27
L29 20 S L22 OR L23
L30 12 S L28 NOT L29
L31 16 S 1840-2002/PY,PRY AND L29
L32 8 S 1840-2002/PY,PRY AND L30

=> FILE HCA
FILE 'HCA' ENTERED AT 13:57:04 ON 25 JUL 2007

=> D L31 1-16 BIB ABS HITSTR HITIND

L31 ANSWER 1 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 140:397587 HCA Full-text
TI **Single crystal thin film**
IN Hasegawa, Katsuya; Izumi, Teruo; Shiohara, Yuh; Sugawara, Yoshihiro; Hirayama, Tsukasa; Oba, Fumiyasu; Ikuhara, Yuichi
PA Sumitomo Electric Industries, Ltd., Japan; International Superconductivity Technology Center, the Juridical Foundation
SO PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004040047	A1	20040513	WO 2003-JP13888	200310 29 <--
JP 2004149380	A	20040527	JP 2002-318523	200210 31

W: CN, KR, US
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR

EP 1557486 A1 20050727 EP 2003-769995
200310
29
<--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
CN 1708607 A 20051214 CN 2003-80102130
200310
29
<--
US 2006009362 A1 20060112 US 2005-526896
200503
07
<--
PRAI JP 2002-318523 A 20021031 <--
WO 2003-JP13888 W 20031029

AB Formation of a **single crystal thin film** of enhanced quality on an underlayer is described, which is effectively applicable to prodn. of an oxide high-temp. **superconductor thin film** being usable in, e.g., **superconductive** wire materials and **superconductive** devices. In particular, a **single crystal thin film** formed on a substrate, the **thin film** constituted of a substance different from that of the substrate, is characterized in that a specified at. layer contained in common in the substrate and the **thin film** is shared at an interface of the substrate and the **thin film**, and that in a region as adjacent to the interface as 100 or fewer unit lattices of the **thin film** apart from the interface, the ratio of crystals having grown with an orientation of ±2 degrees or less deviation angle on the basis of the crystal orientation of the substrate is ≥50%.

IT **111419-82-0**, Barium copper samarium oxide
(formation of **single crystal thin film** via middle layer)
RN 111419-82-0 HCA
CN Barium copper samarium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Cu	x	7440-50-8
Ba	x	7440-39-3
Sm	x	7440-19-9

IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(formation of **single crystal thin film** via middle layer)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IC ICM C30B029-22
ICS H01L039-24
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
ST oxide **superconductor** film wire **superconducting** device epitaxy
IT Epitaxy
Superconducting films
Superconducting wires
Superconductor devices
(formation of **single crystal thin film** via middle layer)
IT **Superconductors**
(oxide; formation of **single crystal thin film** via middle layer)
IT **111419-82-0**, Barium copper samarium oxide
(formation of **single crystal thin film** via middle layer)
IT 1309-48-4, Magnesia, uses **12009-21-1**, Barium zirconate (**BaZrO3**)
(formation of **single crystal thin film** via middle layer)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 2 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 138:63988 HCA Full-text
TI Influence of the second buffer layer for alignment of seed film on Ni tape with NiO buffer layer
AU Kai, M.; Izumi, T.; Hasegawa, K.; Tokunaga, Y.; Asada, S.; Nakamura, Y.; Izumi, T.; Watanabe, T.; Shiohara, Y.
CS ISTEC, Superconductivity Research Laboratory, Koto-ku, Tokyo, 135-0062, Japan
SO Physica C: Superconductivity and Its Applications (Amsterdam, Netherlands) (**2002**), 378-381(Pt. 2), 998-1002
CODEN: PHYCE6; ISSN: 0921-4534
PB Elsevier Science B.V.
DT Journal
LA English

AB To investigate the influence of the buffer layer for the seed film quality which is important to obtain high quality liq. phase epitaxy film, we prepd. several different kinds of SmBa2Cu3Oy (Sm123) seed films on SOE-NiO buffered biaxially textured Ni tapes with and without the 2nd buffer layer of **BaZrO3** by the pulsed laser deposition method. As a consequence of the investigation, it was found that **BaZrO3** is a suitable material as a buffer layer to obtain highly in-plane aligned Sm123 seed films on SOE-NiO buffered biaxially textured Ni tapes.

IT **12009-21-1**, Barium zirconium oxide (**BaZrO3**)
(**BaZrO3** 2nd buffer layer effect for alignment of SmBa2Cu3Oy seed film on Ni tape with NiO buffer layer by pulsed laser deposition)

RN 12009-21-1 HCA

CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **110778-98-8D**, Barium copper samarium oxide (Ba2Cu3SmO7), oxygen-nonstoichiometric
(**BaZrO3** 2nd buffer layer effect for alignment of SmBa2Cu3Oy seed film on Ni tape with NiO buffer layer by pulsed laser deposition)

RN 110778-98-8 HCA

CN Barium copper samarium oxide (Ba2Cu3SmO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Sm	1	7440-19-9

CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76

IT Crystallinity
(**BaZrO3** 2nd buffer layer effect for alignment of SmBa2Cu3Oy seed film on Ni tape with NiO buffer layer by pulsed laser deposition)

IT Vapor deposition process
(laser ablation; **BaZrO3** 2nd buffer layer effect for alignment of SmBa2Cu3Oy seed film on Ni tape with NiO buffer layer by pulsed laser deposition)

IT 1313-99-1, Nickelous oxide, uses 7440-02-0, Nickel, uses
12009-21-1, Barium zirconium oxide (**BaZrO3**)
(**BaZrO3** 2nd buffer layer effect for alignment of SmBa2Cu3Oy seed film on Ni tape with NiO buffer layer by pulsed laser deposition)
IT **110778-98-8D**, Barium copper samarium oxide (Ba2Cu3SmO7), oxygen-nonstoichiometric
(**BaZrO3** 2nd buffer layer effect for alignment of SmBa2Cu3Oy seed film on Ni tape with NiO buffer layer by pulsed laser deposition)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 3 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 137:209097 HCA Full-text
TI LPE growth of RE123 on a metal substrate
AU Izumi, Toru; Yao, Xin; Kai, Masahiko; Hasegawa, Katsuya; Tokunaga, Yoshitaka; Asada, Shigenobu; Nakamura, Yuichi; Izumi, Teruo; Watanabe, Tomonori; Shiohara, Yuh
CS Superconductivity Res. Lab., Tokyo, 135-0062, Japan
SO Nippon Kinzoku Gakkaishi (**2002**), 66(4), 329-333
CODEN: NIKGAV; ISSN: 0021-4876
PB Nippon Kinzoku Gakkai
DT Journal
LA Japanese
AB RE123 **superconductive** oxides are expected to be used for elec. conductors due to its high **superconducting** performance at 77 K. The LPE process has an advantage to fabricate a thick **superconducting** layer at a high growth rate with high **superconducting** properties for realizing high Jc conductors. The authors tried two structures to fabricate in-plane aligned Y123 layer on textured Ni substrates with SOE-NiO. One was a double layered LPE structure and the other was a nonreactive buffered structure using a **BaZrO3** buffer layer. The in-plane aligned Y123 LPE layer was successfully grown on an NiO/Ni textured substrate for each structure and the Tc value of 90 K was achieved in the nonreactive buffered structure. The in-plane alignment of the seed layer is a crucial factor for the double LPE process since the partial dissoln. of worse aligned seed crystals caused formation of noncoverage regions on the surface of the NiO buffer layer, where the NiO buffer layer would react with the soln. during the 2nd LPE processing.
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(LPE growth of barium rare earth cuprate on buffered metal substrates)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2

Zr	1	7440-67-7
Ba	1	7440-39-3

IT **111419-82-0**, Barium copper samarium oxide
(LPE growth of barium rare earth cuprate on buffered metal substrates)
RN 111419-82-0 HCA
CN Barium copper samarium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Cu	x	7440-50-8
Ba	x	7440-39-3
Sm	x	7440-19-9

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 75
ST LPE lanthanide barium cuprate **superconductor** nickel oxide buffer nickel
IT **Superconducting** films
(LPE growth of RE123 on metal substrate)
IT **Superconductors**
(cuprate; LPE growth of barium rare earth cuprate on buffered metal substrates)
IT 1309-48-4, Magnesium oxide (MgO), processes 1313-99-1, Nickel oxide (NiO), processes 7440-02-0, Nickel, processes **12009-21-1**, Barium zirconate (**BaZrO3**)
(LPE growth of barium rare earth cuprate on buffered metal substrates)
IT **111419-82-0**, Barium copper samarium oxide
(LPE growth of barium rare earth cuprate on buffered metal substrates)

L31 ANSWER 4 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 137:209096 HCA Full-text
TI Preparation of SmBa2Cu3Oy films with improved in-plane alignment by pulsed laser deposition
AU Hasegawa, Katsuya; Hobara, Natsuro; Nakamura, Yuichi; Izumi, Teruo; Shiohara, Yuh
CS Superconductivity Res. Lab., International Superconductivity Technology Center, Tokyo, 135-0062, Japan
SO Nippon Kinzoku Gakkaishi (**2002**), 66(4), 320-328
CODEN: NIKGAV; ISSN: 0021-4876
PB Nippon Kinzoku Gakkai

DT Journal
LA Japanese
AB Prepn. of SmBa2Cu3Oy (Sm123) and **BaZrO3** (BZO) films by pulsed laser deposition was studied using MgO **single cryst.** substrates. Highly c-axis oriented Sm123 films with a 4-fold symmetry were successfully deposited on MgO **single crystals**, which had a Tc onset of 93 K and a zero resistance of 89 K. The BZO buffer improved in-plane alignment of the Sm123 film. In addn., highly textured BZO and Sm123 films were realized on in-plane aligned MgO films grown by inclined substrate deposition. The FWHMs (full width at half max.)s of in-plane and out-of-plane alignment for the textured Sm123 in the combination were reached at 10.5° and 4.0°, resp. The reason that the BZO was effective on the epitaxial growth of Sm123 films can not be explained only by the idea of a simple lattice match, since the lattice const. of BZO is close to that of MgO. The effect of the BZO buffer is discussed in view of the interface energy based on crystallog. consideration. A chem. bonding at the interface is important for interface energy as well as the lattice match. Further, the conception of the interface energy on hetero-epitaxial growth was applied for the c/a-axes orientation behavior of RE123.
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(laser epitaxy of barium samarium cuprate **superconducting** films on barium zirconated buffered magnesia substrate under oxygen pressure)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **111419-82-0**, Barium copper samarium oxide
(laser epitaxy of barium samarium cuprate **superconducting** films on barium zirconated buffered magnesia substrate under oxygen pressure)
RN 111419-82-0 HCA
CN Barium copper samarium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Cu	x	7440-50-8
Ba	x	7440-39-3
Sm	x	7440-19-9

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 75
ST laser epitaxy barium samarium cuprate **superconducting** film

zirconate buffer
IT Bond
(interfacial; laser epitaxy of barium samarium cuprate **superconducting** films on barium zirconated buffered magnesia substrate under oxygen pressure)
IT Interfacial energy
Laser epitaxy
Partial pressure
Superconducting films
(laser epitaxy of barium samarium cuprate **superconducting** films on barium zirconated buffered magnesia substrate under oxygen pressure)
IT Crystal structure
Electric resistance
Superconducting critical temperature
(of barium samarium cuprate on magnesia substrate)
IT 7782-44-7, Oxygen, uses
(laser epitaxy of barium samarium cuprate **superconducting** films on barium zirconated buffered magnesia substrate under oxygen pressure)
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(laser epitaxy of barium samarium cuprate **superconducting** films on barium zirconated buffered magnesia substrate under oxygen pressure)
IT 1309-48-4, Magnesium oxide (MgO), processes
(laser epitaxy of barium samarium cuprate **superconducting** films on barium zirconated buffered magnesia substrate under oxygen pressure)
IT **111419-82-0**, Barium copper samarium oxide
(laser epitaxy of barium samarium cuprate **superconducting** films on barium zirconated buffered magnesia substrate under oxygen pressure)

L31 ANSWER 5 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 137:173368 HCA Full-text
TI Fabrication of RE123 layer for coated conductor by double LPE process
AU Nakamura, Yuichi; Hobara, Natsuro; Izumi, Toru; Kai, Masahiko; Hasegawa, Katsuya; Xin, Yao; Asada, Shigenobu; Watanabe, Tomonori; Izumi, Teruo; Shiohara, Yuh
CS Superconductivity Research Laboratory, Koto-ku, Tokyo, 135-0062, Japan
SO AIP Conference Proceedings (**2002**), 614(Advances in Cryogenic Engineering), 659-666
CODEN: APCPCS; ISSN: 0094-243X
PB American Institute of Physics

DT Journal
LA English
AB RE123 **superconductive** oxides are expected to be utilized for elec. conductors due to its **superconducting** performance better than Bi-system **superconductors** at 77 K. The liq. phase epitaxy (LPE) process has the advantage of fabricating a thick **superconducting** layer at a high growth rate maintaining high Jc values in comparison with commonly used vapor deposition processes. We tried to fabricate the double layered LPE process for realizing an in-plane aligned RE123 layer on a textured Ni substrate with a NiO buffer layer. The in-plane aligned double layered LPE structure was successfully grown on NiO/Ni textured substrates and showed a Tc value of 88 K. The in-plane alignment of the seed layer was found to be a crucial factor for the double LPE process because the partial dissoln. of badly aligned seed crystals caused formation of non-coverage regions on the surface of the NiO buffer layer, where the NiO buffer layer would react with the soln. during the second LPE processing. The in-plane aligned Sm123-Ni LPE layer was successfully grown on 10 cm long NiO/Ni textured substrates using the LPE app. by moving a metal tape laterally on the surface of the soln. A growth rate higher than 1 μm/min was attained. Addnl., a non-reactive buffered structure using **BaZrO3** suitable for the LPE process was proposed.
IT **110778-98-8D**, Barium copper samarium oxide Ba2Cu3SmO7, oxygen-deficient
(**superconducting** coating; coated conductor of samarium cuprate layer on Ni substrate/NiO buffer prepd. by double liq. phase epitaxy process)
RN 110778-98-8 HCA
CN Barium copper samarium oxide (Ba2Cu3SmO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Sm	1	7440-19-9

CC 57-2 (Ceramics)
Section cross-reference(s): 76
ST rare earth cuprate layer coating liq phase epitaxy; samarium cuprate **superconducting** layer coating liq phase epitaxy; nickel oxide liq phase epitaxy samarium cuprate **superconductor** coating
IT **Superconductors**
(ceramic, samarium cuprate; coated conductor of samarium cuprate layer on Ni substrate/NiO buffer prepd. by double liq. phase epitaxy process)
IT Liquid phase epitaxy
Orientational order
Superconducting critical temperature
Superconducting tapes

(coated conductor of samarium cuprate layer on Ni substrate/NiO buffer prepd. by double liq. phase epitaxy process)

IT Ceramics
(**superconductors**, samarium cuprate; coated conductor of samarium cuprate layer on Ni substrate/NiO buffer prepd. by double liq. phase epitaxy process)

IT **110778-98-8D**, Barium copper samarium oxide Ba2Cu3SmO7, oxygen-deficient
(**superconducting** coating; coated conductor of samarium cuprate layer on Ni substrate/NiO buffer prepd. by double liq. phase epitaxy process)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 6 OF 16 HCA COPYRIGHT 2007 ACS on STN

AN 132:297453 HCA Full-text

TI Procedure for the production of melt textured volume samples on the basis of high temperature **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC).

IN Kaiser, Axel; Bornemann, Hans

PA Forschungszentrum Karlsruhe Gmbh, Germany

SO Ger. Offen., 6 pp.
CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 19841664	A1	20000420	DE 1998-19841664	199809 11 <--
PRAI DE 1998-19841664			19980911 <--	

AB A procedure for the prodn. of bulk Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC) high-temp. **superconductor** is described. The compn. and the raw materials are optimized in order to achieve the requirements, e.g. the increase of the levitation capability or applications in the magnetic field. A powder mixt. of raw materials is ground in a mill to a uniform mixt. until 0.18 wt.% CO2 is absorbed and the particle size equilibrates. Binders used for shaping the powder mixt. are such as Shellac, PMMA, wax, thermoplastics, or polymers such as polyvinyl butyral, or polyvinyl alc., and their derivs., or polyacrylate or polymethacrylate deriv. The green mass is heat treated in air, each sample being top-seeded with oriented seed crystals, and heat treated in air to seal and texture them. The samples achieve the Tc and Jc **supercond** . properties required, with at least one more heat treatment in Ar, Ar-O, or air atm. for 6-24 h at 800-1030°C. The green mass is heat treated to the sintering temp. where the binder burn-out occurs. The samples may contain 50 Nd-123, 5-50 Nd-422, and/or 0-45 Y-211, and/or 0-45 Sm-211. The compn. is made from one or more of Nd0.8-1.8Ba2-yCu3-zO7-x, where x = 0-0.5, yr = -

0.2-0.2, z = -0.3-0.3, Nd2O3 0-15, Nd4Ba2Cu2O10 0-50, Y-123 0-20, Sm-123 0-20, Y-211 0-45, Sm-211 0-45, Nd-422 0-45 wt.%, a reaction mixt. of Nd-422, BaCuOx, and CuO or an oxide/carbonate mixt. of Nd2O3, BaO, BaCO3 and CuO or a mixt. of Ba/Cu from BaCO3/BaO and CuO and Nd2O3. Compns. may also be made with one or more of (3 mol% BaCuO + 2 mol% CuO) 0-10, silver oxide 0-6, Pt or PtO2 0.1-1, Ce or CeO2 0.1-2, Rh or Rh2O3 0.005-1, Yb2O3 0-2, uranium or uranium oxide (238U or 238U + 235U or natural U) 0-2. The compns. may also contain 0-2 wt.% of one or more of BaO, CuO, CaO2, MgO, Al2O3 or **BaZrO3** (or BaO + ZrO2) 0-15 wt.%, and 0-1 wt.% of one or more of ZrO2, V2O5, TiO2, Nb2O5, Sb2O3, Bi2O3. The method involves handling in air, thus simplifying the process, in particular application of the seed crystals and in the use of a simple furnace.

IT **12009-21-1**, Barium zirconate (**BaZrO3**)
110778-98-8, Barium copper samarium oxide (Ba2Cu3SmO7)
(raw material; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

RN 110778-98-8 HCA
CN Barium copper samarium oxide (Ba2Cu3SmO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Sm	1	7440-19-9

IC ICM C04B035-50
ICS C04B035-45
CC 57-2 (Ceramics)
Section cross-reference(s): 76
ST barium neodymium cuprate **superconductor** compn optimization; melt texturing barium neodymium cuprate **superconductor** compn optimization
IT Polymers, uses
Polyvinyl butyrals
Shellac
Waxes

(binder; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT **Superconductors**
Superconductors
(ceramic, barium neodymium cuprate-based; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT Air
(heat treating atm.; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT Composition
Controlled atmospheres
Raw materials
(procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT Ceramics
Ceramics
(**superconductors**, barium neodymium cuprate-based; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT Plastics, uses
(thermoplastics, binder; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT 124-38-9, Carbon dioxide, processes
(absorption of; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT 79-10-7D, Acrylic acid, polymers, derivs. 79-41-4D, Methacrylic acid, polymers, derivs. 9002-89-5, Polyvinyl alcohol 9011-14-7, PMMA
(binder; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT 7440-37-1, Argon, processes 7782-44-7, Oxygen, processes
(heat treating atm.; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT 513-77-9, Barium carbonate (BaCO3) 1304-28-5, Barium oxide (BaO), processes 1304-76-3, Bismuth oxide (Bi2O3), processes 1306-38-3, Cerium oxide (CeO2), processes 1309-48-4, Magnesium oxide (MgO), processes 1309-64-4, Antimony oxide (Sb2O3), processes

1313-97-9, Neodymium oxide (Nd2O3) 1314-15-4, Platinum oxide (PtO2) 1314-23-4, Zirconium oxide (ZrO2), processes 1314-37-0, Ytterbium oxide (Yb2O3) 1314-62-1, Vanadium oxide (V2O5), processes 1317-38-0, Cupric oxide, processes 1344-28-1, Alumina, processes 7440-06-4, Platinum, processes 7440-16-6, Rhodium, processes 7440-45-1, Cerium, processes 7440-61-1, Uranium, processes 11113-93-2, Uranium oxide **12009-21-1**, Barium zirconate (**BaZrO3**) 12036-35-0, Rhodium oxide (Rh2O3) 13463-67-7, Titanium oxide (TiO2), processes 20667-12-3, Silver oxide 57348-59-1, Barium copper oxide 109064-29-1, Barium copper yttrium oxide (Ba2Cu3YO7) **110778-98-8**, Barium copper samarium oxide (Ba2Cu3SmO7) 158039-01-1, Calcium oxide (CaO2) 262358-78-1, Barium copper neodymium oxide (Ba1.8-2.2Cu2.7-3.3Nd0.8-1.8O6.5-7)
(raw material; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

IT 90804-74-3, Barium copper neodymium oxide (BaCuNd2O5) 111591-04-9, Barium copper neodymium oxide (Ba2Cu3NdO7)
(**superconductors**; procedure for prodn. of melt textured vol. samples on basis of high temp. **superconductor** Nd1Ba2Cu3O7/Nd4Ba2Cu2O10 (NdBC))

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 7 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 132:259335 HCA Full-text
TI Procedure for the production of optimized, melt-textured bulk samples based on high-temperature **superconductors** of composition (Sm/Nd)Ba2Cu3O7
IN Kaiser, Axel; Bornemann, Hans
PA Forschungszentrum Karlsruhe G.m.b.H., Germany
SO Ger. Offen., 6 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 19841574	A1	20000330	DE 1998-19841574	199809 11 <--
PRAI DE 1998-19841574			19980911 <--	

AB A procedure is described for the prodn. and shaping of the title **superconductors** with the compn. and the raw materials varied to achieve optimum compns. for applications such as magnetic levitation. Further the process duration can be kept very short and the handling simplified by applying the seed crystal before the heat treatment and using lower processing temps.

IT **12009-21-1**, Barium zirconium oxide (**BaZrO3**)
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)

RN 12009-21-1 HCA

CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **262358-77-0**, Barium copper samarium oxide (Ba1.8-2.2Cu2.7-3.3Sm0.8-1.8O6.5-7)
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)

RN 262358-77-0 HCA

CN Barium copper samarium oxide (Ba1.8-2.2Cu2.7-3.3Sm0.8-1.8O6.5-7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6.5 - 7	17778-80-2
Cu	2.7 - 3.3	7440-50-8
Ba	1.8 - 2.2	7440-39-3
Sm	0.8 - 1.8	7440-19-9

IT **82642-05-5**, Barium copper samarium oxide (BaCuSm2O5)
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)

RN 82642-05-5 HCA

CN Barium copper samarium oxide (BaCuSm2O5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	5	17778-80-2
Cu	1	7440-50-8
Ba	1	7440-39-3
Sm	2	7440-19-9

IC ICM C04B035-45
ICS C04B035-505
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 57, 75, 77
ST barium neodymium samarium cuprate **superconductor** melt processing; magnetic levitation cuprate **superconductor**
IT Acrylic polymers, uses
Polyvinyl butyrals
(binder; optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
IT Sintering
(hot pressing; optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
IT Binders
Crystallization
Heat treatment
Sintering
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
IT Magnetic levitation
Superconducting magnets
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7 for)
IT Plastics, uses
(thermoplastics, binder; optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
IT 9002-89-5, Polyvinyl alcohol 9011-14-7, PMMA 9011-14-7D, PMMA, derivs.
(binder; optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
IT 1301-96-8, Silver monoxide 1304-76-3, Bismuth sesquioxide, uses 1305-78-8, Calcium oxide, uses 1306-38-3, Cerium dioxide, uses 1309-48-4, Magnesia, uses 1309-64-4, Antimony sesquioxide, uses 1313-96-8, Niobium pentoxide 1314-15-4, Platinum dioxide 1314-23-4, Zirconia, uses 1314-37-0, Ytterbium sesquioxide 1314-62-1, Vanadium pentoxide, uses 1344-28-1, Alumina, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-22-4, Silver, uses 7440-45-1, Cerium, uses 7440-64-4, Ytterbium, uses **12009-21-1**, Barium zirconium oxide (**BaZrO3**) 12036-35-0, Rhodium sesquioxide 13463-67-7, Titania, uses 20667-12-3, Silver oxide (Ag2O)
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
IT 1313-97-9, Neodymium oxide (Nd2O3) 12060-58-1, Samarium oxide

(Sm2O3) 82642-06-6, Barium copper yttrium oxide (BaCuY2O5)
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
IT **262358-77-0**, Barium copper samarium oxide (Ba1.8-2.2Cu2.7-3.3Sm0.8-1.8O6.5-7) 262358-78-1, Barium copper neodymium oxide (Ba1.8-2.2Cu2.7-3.3Nd0.8-1.8O6.5-7)
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
IT 513-77-9, Barium carbonate 1304-28-5, Barium oxide, reactions 1317-38-0, Cupric oxide, reactions 57348-58-0, Barium copper oxide (BaCuO2)
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
IT **82642-05-5**, Barium copper samarium oxide (BaCuSm2O5) 262358-80-5, Barium copper neodymium oxide (BaCuNd4O8)
(optimized, melt-textured bulk samples based on high-temp. **superconductors** of compn. (Sm/Nd)Ba2Cu3O7)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 8 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 132:240782 HCA Full-text
TI Manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing
IN Kaiser, Axel; Bornemann, Hans
PA Forschungszentrum Karlsruhe G.m.b.H., Germany
SO Ger. Offen., 10 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 19841575	A1	20000323	DE 1998-19841575	199809 11 <--
PRAI DE 1998-19841575			19980911 <--	

AB The manuf. uses a powder metallurgy approach and includes (1) mixing powders of raw oxides (e.g., Sm-123 67.9, Sm-211 20.0, Ba3Cu5Ox 10.0, CeO2 2.0, and PtO2 0.1 wt.%), (2) melting the mixt. in air at 11500, (3) quenching to predetd. temp., e.g., 10800, (4) setting seed crystals (e.g., Nd-123 or Nd-422) on the melt surface, (5) slow cooling to predetd. temp., e.g., 9800, to grow oriented crystals, (6) fast cooling to room temp., and (7) heat treating of final crystals in air, argon, or argon/oxygen mixt. at 800-10100 for 6-24 h to provide desired properties of **superconductors** such as Tc and jc. The manuf. of substantial SmBC HTSC allows to achieve the appropriate requirements to the optimal compn. and

properties suitable for the increase of the levitation force or for applications in the magnetic field. The handling in air simplifies the manuf., particularly applying of seed crystals and the use of a simple furnaces.

IT **110778-98-8D**, Barium copper samarium oxide (Ba2Cu3SmO7), oxygen-deficient
(Sm-123; manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing)
RN 110778-98-8 HCA
CN Barium copper samarium oxide (Ba2Cu3SmO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Sm	1	7440-19-9

IT **82642-05-5D**, Barium copper samarium oxide (BaCuSm2O5), oxygen-deficient
(Sm-211; manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing)
RN 82642-05-5 HCA
CN Barium copper samarium oxide (BaCuSm2O5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	5	17778-80-2
Cu	1	7440-50-8
Ba	1	7440-39-3
Sm	2	7440-19-9

IT **12009-21-1**, Barium zirconium oxide (**BaZrO3**)
(manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IC ICM C04B035-45
ICS C04B035-505
CC 57-2 (Ceramics)
Section cross-reference(s): 76
IT **Superconducting** critical current density
Superconducting critical temperature
(Sm-123/Sm-211; manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing)
IT **Superconductors**
Superconductors
(ceramic, high temp.; manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing)
IT Ceramics
Ceramics
(**superconductors**, high temp.; manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing)
IT **110778-98-8D**, Barium copper samarium oxide (Ba2Cu3SmO7), oxygen-deficient
(Sm-123; manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing)
IT **82642-05-5D**, Barium copper samarium oxide (BaCuSm2O5), oxygen-deficient
(Sm-211; manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing)
IT 513-77-9, Barium carbonate 1304-28-5, Barium oxide (BaO), uses 1304-76-3, Bismuth oxide (Bi2O3), uses 1305-79-9, Calcium peroxide (CaO2) 1306-38-3, Cerium oxide (CeO2), uses 1309-48-4, Magnesium oxide, uses 1309-64-4, Antimony oxide (Sb2O3), uses 1313-96-8, Niobium oxide (Nb2O5) 1314-23-4, Zirconium oxide, uses 1314-37-0, Ytterbium oxide (Yb2O3) 1314-62-1, Vanadium oxide (V2O5), uses 1317-38-0, Copper oxide (CuO), uses 1344-28-1, Aluminum oxide, uses 7440-16-6, Rhodium, uses 7440-45-1, Cerium, uses 7440-61-1, Uranium, uses 11113-93-2, Uranium oxide 11129-89-8, Platinum oxide **12009-21-1**, Barium zirconium oxide (**BaZrO3**) 12036-35-0, Rhodium oxide (Rh2O3) 12060-58-1, Samarium oxide (Sm2O3) 13463-67-7, Titanium oxide, uses 20667-12-3, Silver oxide
(manuf. of HTSC articles from SmBa2Cu3O7/Sm2BaCuO5 by in air melt texturing)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 9 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 131:148041 HCA Full-text
TI Process for manufacturing melt-textured volume probes based on samarium barium copper oxide (Sm1Ba2Cu3O7; Sm-123) high-temperature

superconductors

IN Kaiser, Axel; Bornemann, Hans; Burgkhardt, Thomas; Hennig, Wolfgang

PA Forschungszentrum Karlsruhe G.m.b.H., Germany

SO Ger., 6 pp.
CODEN: GWXXAW

DT Patent

LA German

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 19748743	C1	19990819	DE 1997-19748743	199711 05

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PRAI DE 1997-19748743 19971105 <--

AB This process, in which the final product contains Sm-123 ≥50 and Sm-211 5-50 and/or Nd-422 0-45 and/or Y-211 0-45 wt.%, comprises (A) prepg. a base mixt. for the greenware using as matrix-forming powder Sm1.8-1.0Ba2-yCu3-zO7-x ($0 < x < 0.5$; $-0.2 < y < 0.2$; $0.3 < z < 0.3$) mixed with Sm2O3 0-20 and/or Sm2BaCuO5 (Sm-211) 0-50 and/or Y2BaCuO5 (Y-211) 0-45 and/or Nd4Ba2Cu2O10 (Nd-422) 0-45 wt.%, and, if not already mixed with the starting material, adding as additive PtO2 or Pt 0.1-1 and/or CeO2 or Ce 0.1-2 and/or Rh2O3 or Rh 0.005-1 and/or Ag2O or AgO 0-6 and/or Yb2O3 0-2 wt.%, and adding (to max. 17 wt.%) CuO 0-4 and/or BaCuOx 0-6 and/or BaO 0-5 and/or CaO 0-2 and/or MgO 0-2 and/or Al2O3 0-2 and/or **BaZrO3** (or, correspondingly, BaO + ZrO2) 0-15 and/or ZrO2 0-1 and/or V2O5 0-1 and/or TiO2 0-1 and/or Nb2O5 0-1 and/or Sb2O3 0-1 and/or Bi2O3 0-1 wt.%, using (optionally different) particle sizes in the range of 4 nm to 80 μm, (B) homogenizing the mixt. in, e.g., a ball mill, during which a C uptake of ≤0.18 wt.%, via atm. CO2 and/or from an org. binder, is allowable, (C) molding and densifying the mixt., and (D) melt-texturizing the greenware by providing a Nd-123, Sm-123, MgO, or corresponding-type seed crystal whose decompn. temp. is higher than the max. temp. of the heat treatment. The greenware is then subjected to a temp. program in which the greenware is heated at 400 degree/h to 800°, further heated at 300 degree/h to Tmax (Tmax is .apprx.1020° at O partial pressure 80 Pa, or 1050° at O partial pressure 800 Pa), held at Tmax for ≤30 min, cooled (rapidly) at 500 degree/h to .apprx.980° at O partial pressure 800 Pa, or to 960° at O partial pressure 80 Pa, cooled (slowly) at 1-2 degree/h to .apprx.880° at O partial pressure 800 Pa, or to 885° at O partial pressure 80 Pa, further cooled at 60 degree/h to 800°, and cooled to ambient temp. at 300 degree/h. This process can be automated and permits melt-texturizing under vacuum with seed crystals of suitable texture, an provides vol. probes for use in self-stabilizing contact-free magnetic bearings.

IT **12009-21-1**, Barium zirconium oxide **82642-05-5**,
Barium copper samarium oxide (BaCuSm2O5) **236108-66-0**,
Barium copper samarium oxide (Ba1.8-2.2Cu2.7-3.3Sm1-1.8O6.5-7)
(compns. contg.; in manuf. of melt-textured vol. probes based on barium copper samarium oxide high-temp. **superconductors**
)

RN 12009-21-1 HCA

CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

RN 82642-05-5 HCA
CN Barium copper samarium oxide (BaCuSm2O5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	5	17778-80-2
Cu	1	7440-50-8
Ba	1	7440-39-3
Sm	2	7440-19-9

RN 236108-66-0 HCA
CN Barium copper samarium oxide (Ba1.8-2.2Cu2.7-3.3Sm1-1.8O6.5-7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6.5 - 7	17778-80-2
Cu	2.7 - 3.3	7440-50-8
Ba	1.8 - 2.2	7440-39-3
Sm	1 - 1.8	7440-19-9

IT **110778-98-8P**, Barium copper samarium oxide (Ba2Cu3SmO7) (high-temp. **superconductors**; manuf. of melt-textured vol. probes based on)
RN 110778-98-8 HCA
CN Barium copper samarium oxide (Ba2Cu3SmO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Sm	1	7440-19-9

IC ICM C04B035-45
ICS C04B035-50

CC 57-2 (Ceramics)
Section cross-reference(s): 49, 76
ST samarium barium copper oxide high temp **superconductor**; yttrium barium copper oxide; neodymium barium copper oxide; melt textured vol probe oxide
IT Crystallization
(agents; in manuf. of melt-textured vol. probes based on barium copper samarium oxide high-temp. **superconductors**)
IT Waxes
(binder; in manuf. of melt-textured vol. probes based on barium copper samarium oxide high-temp. **superconductors**)
IT Acrylic polymers, uses
Polyvinyl butyrals
(binders; in manuf. of melt-textured vol. probes based on barium copper samarium oxide high-temp. **superconductors**)
IT **Superconductors**
(high-temp., barium copper samarium oxide; manuf. of melt-textured vol. probes based on)
IT Firing (heat treating)
(protocol for; in manuf. of melt-textured vol. probes based on barium copper samarium oxide high-temp. **superconductors**)
IT 9002-89-5
(binder; in manuf. of melt-textured vol. probes based on barium copper samarium oxide high-temp. **superconductors**)
IT 79-10-7D, Acrylic acid, esters, polymers 79-41-4D, Methacrylic acid, esters, polymers
(binders; in manuf. of melt-textured vol. probes based on barium copper samarium oxide high-temp. **superconductors**)
IT 1301-96-8, Silver oxide (AgO) 1304-28-5, Barium oxide, processes 1304-76-3, Bismuth oxide, processes 1306-38-3, Cerium dioxide, processes 1309-48-4, Magnesia, processes 1309-64-4, Antimony trioxide, processes 1313-96-8, Niobium pentoxide 1314-23-4, Zirconia, processes 1314-37-0, Ytterbium oxide 1314-62-1, Vanadium pentoxide, processes 1317-38-0, Cupric oxide, processes 1344-28-1, Aluminum oxide (Al2O3), processes 7440-06-4, Platinum, processes 7440-16-6, Rhodium, processes 7440-45-1, Cerium, processes 11129-89-8, Platinum oxide **12009-21-1**, Barium zirconium oxide 12060-58-1, Samarium oxide 12680-36-3, Rhodium oxide 13463-67-7, Titania, processes 20667-12-3, Silver oxide (Ag2O) 57348-59-1, Barium copper oxide **82642-05-5**, Barium copper samarium oxide (BaCuSm2O5) 82642-06-6, Barium copper yttrium oxide (BaCuY2O5) 90804-74-3, Barium copper neodymium oxide (BaCuNd2O5) **236108-66-0**, Barium copper samarium oxide (Ba1.8-2.2Cu2.7-3.3Sm1-1.8O6.5-7)
(compns. contg.; in manuf. of melt-textured vol. probes based on

barium copper samarium oxide high-temp. **superconductors**
)
IT **110778-98-8P**, Barium copper samarium oxide (Ba2Cu3SmO7)
(high-temp. **superconductors**; manuf. of melt-textured
vol. probes based on)
IT 111591-04-9, Barium copper neodymium oxide (Ba2Cu3NdO7)
(neodymium-123, seed crystals contg.; in manuf. of melt-textured
vol. probes based on barium copper samarium oxide high-temp.
superconductors)
IT 7782-44-7, Oxygen, uses
(partial pressure of, control of; in heat-treatment in manuf. of
melt-textured vol. probes based on barium copper samarium oxide
high-temp. **superconductors**)
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 10 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 131:66670 HCA Full-text
TI Preparation of melt-textured bulk samples based on high-temperature
superconductor NdBa2Cu3O7 (Nd-123)
IN Kaiser, Axel; Bornemann, Hans; Burgkhardt, Thomas; Hennig, Wolfgang
PA Forschungszentrum Karlsruhe G.m.b.H., Germany
SO Ger., 6 pp.
CODEN: GWXXAW
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 19748742	C1	19990701	DE 1997-19748742 <--	199711 05
PRAI DE 1997-19748742			19971105 <--	

AB The compn. and the starting materials are varied to achieve the optimum compns. for various requirements. The final product comprises Nd-123 ≥50, Nd4Ba2Cu2O10 5-50, Y2BaCuO5 0-45, and/or Sm2BaCuO5 0-45 wt.%.
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(prepn. of melt-textured bulk samples based on high-temp.
superconductor NdBa2Cu3O7 contg.)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **82642-05-5P**, Barium copper samarium oxide (BaCuSm2O5)
(prepn. of melt-textured bulk samples based on high-temp. **superconductor** NdBa2Cu3O7 contg.)
RN 82642-05-5 HCA
CN Barium copper samarium oxide (BaCuSm2O5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	5	17778-80-2
Cu	1	7440-50-8
Ba	1	7440-39-3
Sm	2	7440-19-9

IC ICM C04B035-45
ICS C04B035-50
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 38, 57
ST high temp **superconductor** neodymium barium cuprate melt textured prepn; yttrium barium cuprate contg melt textured high temp **superconductor**; samarium barium cuprate contg melt textured high temp **superconductor**
IT Polyvinyl butyrals
Waxes
(binders; prepn. of melt-textured bulk samples based on high-temp. **superconductor** NdBa2Cu3O7 contg.)
IT **Superconductors**
(cuprate; prepn. of melt-textured bulk samples based on high-temp. **superconductor** NdBa2Cu3O7 (Nd-123))
IT **Superconductors**
(high-temp.; prepn. of melt-textured bulk samples based on high-temp. **superconductor** NdBa2Cu3O7 (Nd-123))
IT Binders
(prepn. of melt-textured bulk samples based on high-temp. **superconductor** NdBa2Cu3O7 contg.)
IT Plastics, uses
(thermoplastics, binders; prepn. of melt-textured bulk samples based on high-temp. **superconductor** NdBa2Cu3O7 contg.)
IT 79-10-7D, Acrylic acid, esters, polymers 79-41-4D, Methacrylic acid, esters, polymers 9002-89-5, Polyvinyl alcohol
(binder; prepn. of melt-textured bulk samples based on high-temp.

superconductor NdBa2Cu3O7 contg.)

IT 111591-04-9P, Barium copper neodymium oxide (Ba2Cu3NdO7)
(prepn. of melt-textured bulk samples based on high-temp. **superconductor** NdBa2Cu3O7 (Nd-123))

IT 1301-96-8, Silver oxide (AgO) 1304-28-5, Barium oxide (BaO), uses 1304-76-3, Bismuth oxide (Bi2O3), uses 1305-78-8, Calcium oxide (CaO), uses 1306-38-3, Cerium oxide (CeO2), uses 1309-48-4, Magnesium oxide (MgO), uses 1309-64-4, Antimony oxide (Sb2O3), uses 1313-96-8, Niobium oxide (Nb2O5) 1314-15-4, Platinum oxide (PtO2) 1314-23-4, Zirconium oxide (ZrO2), uses 1314-37-0, Ytterbium oxide (Yb2O3) 1314-62-1, Vanadium oxide (V2O5), uses 1317-38-0, Cupric oxide, uses 1344-28-1, Aluminum oxide (Al2O3), uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-45-1, Cerium, uses **12009-21-1**, Barium zirconate (**BaZrO3**) 12036-35-0, Rhodium oxide (Rh2O3) 13463-67-7, Titanium dioxide, uses 20667-12-3, Silver oxide (Ag2O) 57348-59-1, Barium copper oxide
(prepn. of melt-textured bulk samples based on high-temp. **superconductor** NdBa2Cu3O7 contg.)

IT **82642-05-5P**, Barium copper samarium oxide (BaCuSm2O5) 82642-06-6P, Barium copper yttrium oxide (BaCuY2O5) 90804-74-3P, Barium copper neodymium oxide (BaCuNd2O5)
(prepn. of melt-textured bulk samples based on high-temp. **superconductor** NdBa2Cu3O7 contg.)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 11 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 130:161897 HCA Full-text
TI Liquid phase epitaxy of rare earth barium cuprate **superconductors** through a porous material
IN Evetts, Jan Edgar; Glowacki, Bartlomiej Andrej; Kursumovic, Ahmed; Henson, Ronald
PA Cambridge Advanced Materials Ltd., UK
SO PCT Int. Appl., 15 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9907923	A1	19990218	WO 1998-GB2333	199808 04

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W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR; KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

AU 9886376 A 19990301 AU 1998-86376
199808
04
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EP 1005580 A1 20000607 EP 1998-937651
199808
04
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R: BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, SE, FI

PRAI GB 1997-16571 A 19970805 <--

WO 1998-GB2333 W 19980804 <--

AB A method of coating a substrate by LPE comprises applying a flux, e.g. within a crucible, to the substrate through a porous material comprising ≥1 rare earth elements or their compds. that are sol. in the flux.

IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(crucible; in liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material)

RN 12009-21-1 HCA

CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **82642-05-5**, Barium copper samarium oxide (BaCuSm2O5)
(liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material contg.)

RN 82642-05-5 HCA

CN Barium copper samarium oxide (BaCuSm2O5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	5	17778-80-2

Cu	1	7440-50-8
Ba	1	7440-39-3
Sm	2	7440-19-9

IT **110778-98-8P**, Barium copper samarium oxide (Ba2Cu3SmO7)
(**superconductor**; liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material)
RN 110778-98-8 HCA
CN Barium copper samarium oxide (Ba2Cu3SmO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Sm	1	7440-19-9

IC ICM C30B019-04
ICS C30B029-22
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 57, 75
ST liq phase epitaxy rare earth barium cuprate **superconductor** ; porous material LPE cuprate **superconductor**
IT **Superconductors**
(cuprate; liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material)
IT Fluxes
(in liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material)
IT Liquid phase epitaxy
Porous materials
(liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material)
IT Crucibles
(liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material using)
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(crucible; in liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material)
IT 57348-59-1, Barium copper oxide 220276-11-9, Barium copper fluoride oxide
(flux; in liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material)
IT 82642-01-1, Barium copper erbium oxide (BaCuEr2O5) 82642-02-2,

Barium copper europium oxide (BaCuEu2O5) 82642-03-3, Barium copper gadolinium oxide (BaCuGd2O5) 82642-04-4, Barium copper holmium oxide (BaCuHo2O5) **82642-05-5**, Barium copper samarium oxide (BaCuSm2O5) 82642-06-6, Barium copper yttrium oxide (BaCuY2O5) 82642-07-7, Barium copper ytterbium oxide (BaCuYb2O5) 90804-74-3, Barium copper neodymium oxide (BaCuNd2O5)
(liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material contg.)

IT 109064-29-1P, Barium copper yttrium oxide (Ba2Cu3YO7)
110778-86-4P, Barium copper europium oxide (Ba2Cu3EuO7)
110778-98-8P, Barium copper samarium oxide (Ba2Cu3SmO7)
110779-01-6P, Barium copper ytterbium oxide (Ba2Cu3YbO7)
111590-97-7P, Barium copper erbium oxide (Ba2Cu3ErO7)
111590-98-8P, Barium copper gadolinium oxide (Ba2Cu3GdO7)
111591-00-5P, Barium copper holmium oxide (Ba2Cu3HoO7)
111591-04-9P, Barium copper neodymium oxide (Ba2Cu3NdO7)
(**superconductor**; liq. phase epitaxy of rare earth barium cuprate **superconductors** through a porous material)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 12 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 128:186629 HCA Full-text
TI Top-seeded solution growth of SmBa2Cu3O7-δ seed crystals for melt texturing of YBa2Cu3O7-δ
AU Krauns, Ch.; Bringmann, B.; Brandt, C.; Ullrich, M.; Heinemann, K.; Freyhardt, H. C.
CS Institut fur Metallphysik, Universitat Gottingen, Gottingen, D-37073, Germany
SO Institute of Physics Conference Series (**1997**), 158(Applied Superconductivity 1997, Vol. 2), 833-836
CODEN: IPCSEP; ISSN: 0951-3248
PB Institute of Physics Publishing
DT Journal
LA English
AB SmBa2Cu3O7-δ (Sm123) seed crystals were fabricated by a Top-Seeded-Soln.-Growth (TSSG) method using **BaZrO3** crucibles. Crystals up to a size of 100 mm2 in the a-b plane were grown. In this presentation, the crystal growth will be described and the growth parameters are discussed. Also, the **superconducting** and structural properties of the Sm123 seed crystals will be presented. These seed crystals were successfully employed for the melt texturing of YBa2Cu3O7-δ (Y123) monoliths of diams. up to 50 mm. The **superconducting** and structural properties of the melt-textured Y123 detd. by hall probe measurements and optical microscopy will be presented.
IT **110778-98-8D**, Barium copper samarium oxide (Ba2Cu3SmO7), oxygen-deficient
(top-seeded soln. growth of SmBa2Cu3O7-δ seed crystals for

melt texturing of YBa2Cu3O7-δ)
RN 110778-98-8 HCA
CN Barium copper samarium oxide (Ba2Cu3SmO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Sm	1	7440-19-9

CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
IT Remanence
Superconductivity
(of barium copper samarium oxide seed crystals)
IT Crystal growth
Crystal nucleation
Superconductors
(top-seeded soln. growth of SmBa2Cu3O7-δ seed crystals for melt texturing of YBa2Cu3O7-δ)
IT 109064-29-1D, Barium copper yttrium oxide (Ba2Cu3YO7), oxygen-deficient **110778-98-8D**, Barium copper samarium oxide (Ba2Cu3SmO7), oxygen-deficient
(top-seeded soln. growth of SmBa2Cu3O7-δ seed crystals for melt texturing of YBa2Cu3O7-δ)
RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 13 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 124:326359 HCA Full-text
TI Thermodynamic stability of Sm1+xBa2-xCu3Oy ($0 \leq x \leq 0.4$)
AU Xing, Xianran; Qiao, Zhiyu; Wei, Shoukun
CS Univ. Sci. Technol. Beijing, Beijing, 100083, Peop. Rep. China
SO Jinshu Xuebao (**1996**), 32(2), 144-148
CODEN: CHSPA4; ISSN: 0412-1961
PB Kexue
DT Journal
LA Chinese
AB An assembly for performing emf. measurements using a CaF2 **single crystal** as a solid state electrolyte has been constructed. From the emf. data, the std. Gibbs energies of formation of member oxides in the Sm-Ba-Cu-O system were calcd. The thermodn. stability of the complex oxide Sn1+xBa2-xCu3Oy ($0 \leq x \leq 0.4$) decreases with the increase in the solid soly. x.
IT **12009-21-1**, Barium zirconium oxide (**bazro3**)

(std. Gibbs energies of formation of oxides)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **111419-82-0**, Barium copper samarium oxide
(thermodn. stability of Sm1+xBa2-xCu3Oy ($0 \leq x \leq 0.4$))
RN 111419-82-0 HCA
CN Barium copper samarium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Cu	x	7440-50-8
Ba	x	7440-39-3
Sm	x	7440-19-9

IT **82642-05-5**, Samarium barium copper oxide (Sm2BaCuO5)
121871-36-1, Barium copper samarium oxide (Ba2Cu3smO6.5)
124924-04-5, Barium copper samarium oxide (Ba1.6Cu3Sm1.4O6.7)
(thermodn. stability of Sm1+xBa2-xCu3Oy ($0 \leq x \leq 0.4$) in view of the formation and reaction energies of the system oxides)
RN 82642-05-5 HCA
CN Barium copper samarium oxide (BaCuSm2O5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	5	17778-80-2
Cu	1	7440-50-8
Ba	1	7440-39-3
Sm	2	7440-19-9

RN 121871-36-1 HCA
CN Barium copper samarium oxide (Ba2Cu3SmO6.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6.5	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Sm	1	7440-19-9

RN 124924-04-5 HCA
CN Barium copper samarium oxide (Ba1.6Cu3Sm1.4O6-7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	6 - 7	17778-80-2
Cu	3	7440-50-8
Ba	1.6	7440-39-3
Sm	1.4	7440-19-9

CC 69-2 (Thermodynamics, Thermochemistry, and Thermal Properties)
Section cross-reference(s): 76
IT 1314-23-4, Zirconium oxide (zro2), properties **12009-21-1**, Barium zirconium oxide (**bazro3**)
(std. Gibbs energies of formation of oxides)
IT **111419-82-0**, Barium copper samarium oxide
(thermodn. stability of Sm1+xBa2-xCu3Oy ($0 \leq x \leq 0.4$))
IT 12009-24-4, Barium samarium oxide (Basm2O4) 12054-02-3, Samarium cuprate (Sm2CuO4) 57348-58-0, Barium cuprate (BaCuO2) **82642-05-5**, Samarium barium copper oxide (Sm2BaCuO5) **121871-36-1**, Barium copper samarium oxide (Ba2Cu3smO6.5) **124924-04-5**, Barium copper samarium oxide (Ba1.6Cu3Sm1.4O6.7)
(thermodn. stability of Sm1+xBa2-xCu3Oy ($0 \leq x \leq 0.4$) in view of the formation and reaction energies of the system oxides)

L31 ANSWER 14 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 124:42714 HCA Full-text
TI Plasma-sprayed high-temperature **superconductor** thick layers on metallic and ceramic substrates. Production, after treatment, microstructure, and properties
AU Aschern, Winfried
CS Inst. Werkst. Energ., Forschungszentrum Juelich GmbH, Juelich, D-52425, Germany

SO Berichte des Forschungszentrums Juelich (**1995**), Juel-3073, 149 pp.
CODEN: FJBEE5; ISSN: 0366-0885
DT Report
LA German
AB The plasma spraying was studied of YBa2Cu3O7 and Bi2Sr2CaCu2O8 thick **superconducting** films on ceramic and metal substrates at low pressures and at atm. pressures. The initial films have multiple phases and are not **superconducting.** Thermal treatment in order to produce an optimum microstructure is necessary. Sintering and melt-texturing in different atms. were used as after treatments. The relation between **supercond.** and microstructure is discussed. The interactions between the films and the substrates were studied. Buffer layers were tested. Magnetic shields were developed using these processes.
IT **12009-21-1**, Barium zirconium oxide (**BaZrO3**)
(interface reaction product; microstructure and **supercond**. of processed plasma-sprayed cuprate **superconductor** films)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **110778-98-8**, Barium copper samarium oxide (Ba2Cu3SmO7)
(substrate; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)
RN 110778-98-8 HCA
CN Barium copper samarium oxide (Ba2Cu3SmO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Sm	1	7440-19-9

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 56, 57
ST barium copper yttrium oxide plasma spraying; bismuth calcium copper strontium oxide **superconductor**; sintering cuprate **superconductor** film microstructure; melt texturing cuprate **superconductor** film microstructure; buffer layer cuprate

superconductor substrate; magnetic **superconducting** shield cuprate

IT Crystallization
Diffusion
Electric resistance
Magnetic susceptibility
(microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT Air
(spraying atm.; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT **Superconductivity**
(crit. c.d., microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT **Superconductivity**
(crit. temp., microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT **Superconductor** devices
(magnetic shields, microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT Shields
(magnetic, **superconductive**, microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT 7440-22-4, Silver, uses
(binder for bismuth calcium copper strontium oxide; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT 12267-77-5, Barium cerium oxide (BaCeO3)
(cerium dioxide interface reaction product; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT 513-77-9, Barium carbonate 1314-36-9, Yttrium sesquioxide, formation (nonpreparative) 1317-39-1, Cuprous oxide, formation (nonpreparative) 37190-19-5, Barium copper oxide (BaCu2O2) 82642-06-6, Barium copper yttrium oxide (BaCuY2O5) 109489-85-2, Barium copper yttrium oxide (Ba2Cu3YO6)
(impurity phase; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT 57348-58-0, Barium copper oxide (BaCuO2)
(impurity phase; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

IT **12009-21-1**, Barium zirconium oxide (**BaZrO3**)
(interface reaction product; microstructure and **supercond**. of processed plasma-sprayed cuprate **superconductor** films)

IT 1317-38-0, Cupric oxide, reactions
(interface reaction; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)
IT 117188-05-3P, Calcium copper strontium oxide 124230-96-2P, Calcium copper strontium oxide ((Ca,Sr)2CuO3) 125648-74-0P, Calcium copper strontium oxide (Ca0-1CuSr0-1O2)
(intermediate; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)
IT 109064-29-1, Barium copper yttrium oxide (Ba2Cu3YO7) 115866-34-7, Bismuth calcium copper strontium oxide (Bi2CaCu2Sr2O8)
(microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)
IT 149320-43-4, Bismuth calcium strontium oxide (Bi2Ca0-3Sr0-3O6)
(microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)
IT 7440-37-1, Argon, processes
(spraying atm.; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)
IT 1309-48-4, Magnesia, processes 7440-02-0, Nickel, processes 7783-40-6, Magnesium fluoride 12606-02-9, Inconel 600 12611-78-8, AISI 321 **110778-98-8**, Barium copper samarium oxide (Ba2Cu3SmO7)
(substrate; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)
IT 1306-38-3, Cerium dioxide, processes 11068-69-2, Nimonic 75 12047-27-7, Barium titanate, processes 64417-98-7, Yttrium zirconium oxide 171740-96-8
(substrate; microstructure and **supercond.** of processed plasma-sprayed cuprate **superconductor** films)

L31 ANSWER 15 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 120:93216 HCA Full-text
TI Production of oxide **superconductors** having large magnetic levitation force
IN Kondoh, Akihiro; Murakami, Masato; Takaichi, Hiroshi; Koshizuka, Naoki; Tanaka, Shoji; Kagiya, Syoichi
PA International Superconductivity Technology Center, Japan; Kawasaki Jukogyo Kabushiki Kaisha; Hokuriku Electric Power Co.; Nippon Steel Corp.
SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI EP 562640 A1 19930929 EP 1993-105112
199303
27
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EP 562640 B1 19970924
R: DE, FR, GB
JP 05279032 A 19931026 JP 1992-101952
199203
27
<--
JP 3115695 B2 20001211
JP 05279034 A 19931026 JP 1992-101954
199203
27
<--
JP 3115696 B2 20001211
US 5474976 A 19951212 US 1993-39561
199303
29
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PRAI JP 1992-101952 A 19920327 <--
JP 1992-101954 A 19920327 <--

AB A method for producing an REBaCuO oxide **superconductor** having large magnetic levitation force, where RE = Y, Sm, Eu, Gd, Dy, Ho, Er, or Yb, involves the steps of using a raw material mixt. as the starting feed, heating the raw material mixt. for partial melting, followed by cooling and solidification, pulverizing and mixing the resulting solid, shaping the resulting mixt. into a given shape, placing or embedding nucleants on or in the resulting shape, followed by heating for partial melting, and cooling the resulting partial melt to a temp. at which a **superconducting** phase starts to form, followed by slow cooling, whereby the **superconducting** phase is preferentially formed and grown from a nucleation site.

IT **12009-21-1**, Barium zirconium oxide (**BaZrO3**)
82642-05-5, Barium copper samarium oxide (BaCuSm2O5)
(nucleant, in prepn. of rare earth barium copper oxide **superconductors** having large magnetic levitation force)

RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

RN 82642-05-5 HCA

CN Barium copper samarium oxide (BaCuSm2O5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	5	17778-80-2
Cu	1	7440-50-8
Ba	1	7440-39-3
Sm	2	7440-19-9

IT **111419-82-0P**, Barium copper samarium oxide
(**superconductor**, having large magnetic levitation
force, prepn. of)
RN 111419-82-0 HCA
CN Barium copper samarium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Cu	x	7440-50-8
Ba	x	7440-39-3
Sm	x	7440-19-9

IC ICM H01L039-24
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 57, 77
ST oxide **superconductor** prodn; barium copper rare earth oxide **superconductor**
IT **Superconductors**
(rare earth barium copper oxide, having large magnetic levitation
force, prepn. of)
IT 1306-38-3, Cerium oxide (CeO2), uses 1308-96-9, Europium oxide (Eu2O3) 1309-48-4, Magnesium oxide (MgO), uses 1312-81-8, Lanthanum oxide (La2O3) 1313-97-9, Neodymium oxide (Nd2O3) 1314-23-4, Zirconium oxide (ZrO2), uses 1314-36-9, Yttrium oxide (Y2O3), uses 1314-37-0, Ytterbium oxide (Yb2O3) 7439-88-5, Iridium, uses 7440-04-2, Osmium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 12009-18-6, Barium tin oxide (BaSnO3)
12009-21-1, Barium zirconium oxide (**BaZrO3**)
12055-62-8, Holmium oxide (Ho2O3) 12060-58-1, Samarium oxide (Sm2O3) 12060-59-2, Strontium titanium oxide (SrTiO3) 12061-16-4, Erbium oxide (Er2O3) 12064-62-9, Gadolinium oxide (Gd2O3) 82642-01-1, Barium copper erbium oxide (BaCuEr2O5) 82642-02-2, Barium copper europium oxide (BaCuEu2O5) 82642-04-4,

Barium copper holmium oxide (BaCuHo2O5) **82642-05-5**, Barium copper samarium oxide (BaCuSm2O5) 82642-07-7, Barium copper ytterbium oxide (BaCuYb2O5) 111419-84-2, Barium copper neodymium oxide
(nucleant, in prepn. of rare earth barium copper oxide **superconductors** having large magnetic levitation force)

IT 20667-12-3, Silver oxide (Ag2O)
(prepn. of oxide **superconductors** contg., having large magnetic levitation force)

IT 107539-20-8P, Barium copper yttrium oxide 109457-22-9P, Barium copper dysprosium oxide 109457-23-0P, Barium copper erbium oxide 109457-24-1P, Barium copper europium oxide 109489-92-1P, Barium copper holmium oxide 110687-33-7P, Barium copper ytterbium oxide 110687-67-7P, Barium copper gadolinium oxide **111419-82-0P**, Barium copper samarium oxide
(**superconductor**, having large magnetic levitation force, prepn. of)

L31 ANSWER 16 OF 16 HCA COPYRIGHT 2007 ACS on STN
AN 116:267165 HCA Full-text
TI Synthesis of high-temperature **superconducting** coatings and patterns by melt writing and oxidation of metallic precursor alloys
IN Gao, Wei; Vander Sande, John B.
PA Massachusetts Institute of Technology, USA
SO PCT Int. Appl., 15 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9200611	A1	19920109	WO 1991-US4430	199106 21 <--
US 5786306	A	19980728	US 1991-696973	199105 01 <--

W: CA, JP
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE

PRAI US 1990-542170 A 19900622 <--

AB A method for fabricating **superconducting** oxides and **superconducting** oxide composites, and for joining **superconductors** to other materials, includes applying a coating of a molten alloy contg. metallic elements of an oxide to a substrate surface, and then oxidizing the molten alloy in order to

form a **superconducting** oxide. The method further includes contacting a material to the molten alloy and then oxidizing the molten alloy, such that the material is joined to the oxidized molten alloy.

IT **111419-82-0P**, Barium copper samarium oxide
(prepn. of **superconductive** coating of, by molten alloy deposition and oxidn.)
RN 111419-82-0 HCA
CN Barium copper samarium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Cu	x	7440-50-8
Ba	x	7440-39-3
Sm	x	7440-19-9

IT **12009-21-1**, Barium zirconate
(substrate, for oxide **superconductor** coatings made from molten alloy deposition and oxidn.)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IC ICM H01L039-24
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 57, 75
ST oxide **superconductor** coating prepn; molten alloy deposition oxidn **superconductor**
IT Coating process
(for oxide **superconductor** prepn.)
IT Epitaxy
(of oxide **superconductor** coatings)
IT **Superconductors**
(oxide coatings, prepn. of, from molten alloy deposition and oxidn.)
IT 113390-97-9 118369-04-3 129645-32-5 131411-59-1 131411-61-5
132571-24-5 137230-30-9 140154-03-6 140154-04-7 140154-05-8
140154-06-9 140154-07-0 140154-08-1 140154-09-2 140154-10-5
140154-11-6 140154-12-7 140154-13-8 140154-14-9 140154-15-0
140154-16-1 140154-17-2 140154-18-3 140154-19-4 140154-20-7

140154-21-8 140154-22-9 140154-23-0 140154-24-1 140154-25-2
140154-26-3 140154-27-4
(deposition and oxidn. of molten, for oxide **superconductor** coating prepn.)

IT 65107-47-3P, Barium copper lanthanum oxide 107539-20-8P, Barium copper yttrium oxide 108658-67-9P, Copper lanthanum strontium oxide 109457-22-9P, Barium copper dysprosium oxide 109457-23-0P, Barium copper erbium oxide 109457-24-1P, Barium copper europium oxide 109457-25-2P, Barium copper lutetium oxide 110687-33-7P, Barium copper ytterbium oxide 110687-67-7P, Barium copper gadolinium oxide **111419-82-0P**, Barium copper samarium oxide 111419-84-2P, Barium copper neodymium oxide 114901-49-4P, Barium copper ytterbium yttrium oxide 114901-61-0P, Bismuth calcium copper strontium oxide 116098-37-4P, Barium copper silver yttrium oxide 116098-54-5P, Barium copper thallium oxide 116517-51-2P, Barium calcium copper thallium oxide 116739-98-1P, Bismuth calcium copper lead strontium oxide 117944-63-5P, Barium calcium copper lead thallium oxide 120863-29-8P, Calcium copper lead strontium yttrium oxide 121891-68-7P, Copper lutetium strontium oxide 124386-52-3P, Cerium copper neodymium oxide 124386-58-9P, Bismuth copper lanthanum lead strontium oxide 125298-16-0P, Bismuth calcium copper lead silver strontium oxide 125298-27-3P, Barium copper promethium oxide 126345-78-6P, Barium copper strontium ytterbium oxide 127886-46-8P, Barium calcium copper ytterbium oxide 134854-83-4P, Cerium copper lead neodymium strontium oxide 136596-70-8P 139250-86-5P 140417-85-2P 141617-20-1P, Bismuth calcium lead strontium tin oxide
(prepn. of **superconductive** coating of, by molten alloy deposition and oxidn.)

IT 1309-48-4, Magnesium oxide, uses 1344-28-1, Alumina, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7440-57-5, Gold, uses **12009-21-1**, Barium zirconate 12060-59-2, Strontium titanate 12597-68-1, Stainless steel, uses
(substrate, for oxide **superconductor** coatings made from molten alloy deposition and oxidn.)

=> D L32 1-8 BIB ABS HITSTR HITIND

L32 ANSWER 1 OF 8 HCA COPYRIGHT 2007 ACS on STN
AN 138:47879 HCA Full-text
TI High-quality RE-123 **single crystals** grown in **BaZrO3** crucible
AU Morita, Y.; Motohashi, T.; Sugihara, S.; Yamauchi, H.
CS Materials and Structures Laboratory, Tokyo Institute of Technology,

Midori-ku, Yokohama, 226-8503, Japan

SO Physica C: Superconductivity and Its Applications (Amsterdam, Netherlands) (**2002**), 378-381(Pt. 1), 360-363
CODEN: PHYCE6; ISSN: 0921-4534
PB Elsevier Science B.V.
DT Journal
LA English

AB In detailed studies on the flux-pinning property of high-Tc **superconducting** copper oxides, high-quality **single crystals** are indispensable to clarify the influence of defects of different types such as the grain boundary, oxygen inhomogeneous distribution, and cation impurities. In the present study, we successfully grew high-quality RE-123 **single crystals** using **BaZrO3** crucibles and measured the magnetization of the crystals. High d. (.apprx.99%) and small grain size (<1 μm) are characteristic to the **BaZrO3** crucible as compared to crucibles of other types. With **BaZrO3** crucibles we obtained a Y-123 **single crystal** as large as 11+12+1 mm3 and a decent sized Lu-123 **single crystal** of 3+3+0.1 mm3 which had never been able to be synthesized in single phase before. To our best knowledge, this crystal is the largest one for Y-123 grown by a flux method. Crystals of typically .apprx.1.5+1.5+0.1 mm3 in size were annealed at 450 °C for 200 h in flowing O2 gas. The crystals exhibited crit. temps. of .apprx.93.4 K and sharp transitions with ΔTc<0.8 K. The M-T curves for the crystals exhibited significantly broadened transitions even at fields as low as H.dblvert.c=10 Oe. Such broadening in the transition curve reflects weak flux-pinning capability of the crystal.

IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(crucible; high-quality RE-123 **single crystals** grown in **BaZrO3** crucible)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **111591-03-8P**, Barium copper lutetium oxide (Ba2Cu3LuO7)
(high-quality RE-123 **single crystals** grown in **BaZrO3** crucible)
RN 111591-03-8 HCA
CN Barium copper lutetium oxide (Ba2Cu3LuO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Lu	1	7439-94-3

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 75, 77
IT Annealing
Grain boundaries
Magnetic flux pinning
Superconducting critical temperature
(high-quality RE-123 **single crystals** grown in **BaZrO3** crucible)
IT Cuprates, properties
(high-quality RE-123 **single crystals** grown in **BaZrO3** crucible)
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(crucible; high-quality RE-123 **single crystals** grown in **BaZrO3** crucible)
IT 109064-29-1P, Barium copper yttrium oxide (Ba2Cu3YO7)
111591-03-8P, Barium copper lutetium oxide (Ba2Cu3LuO7)
(high-quality RE-123 **single crystals** grown in **BaZrO3** crucible)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 2 OF 8 HCA COPYRIGHT 2007 ACS on STN
AN 137:147879 HCA Full-text
TI Growth of high-quality RE-123 **single crystals** using **BaZrO3** crucibles
AU Tomohashi, Teruki; Morita, Yusuke; Karppinen, Maarit; Yamauchi, Hisao
CS Materials and Structures Lab., Tokyo Institute of Technology, Tokyo, Japan
SO FSST News (**2002**), 92, 5-6, 11
CODEN: FSNEFR
PB Mito Kagaku Gijitsu Kyokai
DT Journal; General Review
LA Japanese
AB A review, including growth of Y-123 and Lu-123 **superconductor** crystals.
IT **109457-25-2**, Barium copper lutetium oxide
(growth of high-quality RE-123 **single crystals** using **BaZrO3** crucibles)
RN 109457-25-2 HCA
CN Barium copper lutetium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2

Cu	x	7440-50-8
Ba	x	7440-39-3
Lu	x	7439-94-3

IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(growth of high-quality RE-123 **single crystals** using **BaZrO3** crucibles)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

CC 75-0 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
IT **Superconductors**
(cuprate; growth of high-quality RE-123 **single crystals** using **BaZrO3** crucibles)
IT Crucibles
Crystal growth
Crystal growth apparatus
(growth of high-quality RE-123 **single crystals** using **BaZrO3** crucibles)
IT 107539-20-8, Yttrium barium copper oxide **109457-25-2**, Barium copper lutetium oxide
(growth of high-quality RE-123 **single crystals** using **BaZrO3** crucibles)
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(growth of high-quality RE-123 **single crystals** using **BaZrO3** crucibles)

L32 ANSWER 3 OF 8 HCA COPYRIGHT 2007 ACS on STN
AN 134:186743 HCA Full-text
TI Effect of cation composition and oxygen nonstoichiometry on Jc-B properties of Nd123
AU Kagiyama, T.; Shimoyama, J.; Otzschi, K. D.; Kishio, K.; Kitazawa, K.; Chikumoto, N.; Murakami, M.
CS Department of Superconductivity, University of Tokyo, Tokyo, 113-8656, Japan
SO Physica C: Superconductivity and Its Applications (Amsterdam) (**2000**), 341-348(Pt. 3, Materials and Mechanisms of Superconductivity: High Temperature Superconductors VI, Part 3),

1445-1446
CODEN: PHYCE6; ISSN: 0921-4534
PB Elsevier Science B.V.
DT Journal
LA English
AB Effect of the cation compn. and O contents on flux pinning properties of Nd-123 was studied using **single crystals** grown by flux method. The obsd. secondary peak effect in Jc-B curves was largest for Nd-rich crystal (x .apprx. 0.1), and Jc systematically increased with decreasing O deficiency. These results suggested that cation substitution generates more effective pinning site than O deficiency in Nd-123.
IT **12009-21-1**, Barium zirconium oxide (**BaZrO3**)
(crucible material; effect of cation compn. and oxygen nonstoichiometry on Jc-B properties of Nd123)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **111591-04-9**, Barium copper neodymium oxide (Ba2Cu3NdO7)
(effect of cation compn. and oxygen nonstoichiometry on Jc-B properties of Nd123)
RN 111591-04-9 HCA
CN Barium copper neodymium oxide (Ba2Cu3NdO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Nd	1	7440-00-8

CC 76-4 (Electric Phenomena)
ST barium copper neodymium oxide **supercond** cation compn nonstoichiometry
IT Annealing
Crucibles
Crystal growth
Magnetic flux pinning
Nonstoichiometry
Superconducting critical current density

Superconducting critical temperature
(effect of cation compn. and oxygen nonstoichiometry on Jc-B properties of Nd123)
IT 1314-23-4, Zirconia, uses 1314-36-9, Yttria, uses
12009-21-1, Barium zirconium oxide (**BaZrO3**)
64417-98-7, Yttrium zirconium oxide
(crucible material; effect of cation compn. and oxygen nonstoichiometry on Jc-B properties of Nd123)
IT **111591-04-9**, Barium copper neodymium oxide (Ba2Cu3NdO7)
(effect of cation compn. and oxygen nonstoichiometry on Jc-B properties of Nd123)
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 4 OF 8 HCA COPYRIGHT 2007 ACS on STN
AN 129:338370 HCA Full-text
TI Comparative study of oxygen diffusion in rare earth REBa2Cu3O7-δ **single crystals** (RE=Y, Er, Dy) with different impurity levels
AU Klaser, Marion; Kaiser, Joachim; Stock, Fredy; Muller-Vogt, German; Erb, Andreas
CS Kristall- und Materiallabor der Fakultat fur Physik, Universitat Karlsruhe, Karlsruhe, D-76128, Germany
SO Physica C: Superconductivity (Amsterdam) (**1998**), 306(3&4), 188-198
CODEN: PHYCE6; ISSN: 0921-4534
PB Elsevier Science B.V.
DT Journal
LA English
AB The authors report on measurements of the chem. diffusion coeffs. of rare earth cuprate **single crystals** REBa2Cu3O7-δ (RE=Y, Er, Dy) grown in crucibles made of Y2O3-stabilized ZrO2 and **BaZrO3.** The diffusion coeffs. were detd. by in situ measurement of the elec. cond. using a four point method during the oxygenation at various O partial pressures and at 390-550°. In this range the diffusion coeff. was detd. between 3.7 + 10-9 cm2/s and 6.6 + 10-8 cm2/s independent of the rare earth atom or of the different impurity levels. For all crystals the in- and out-diffusion process can be described with the same time const. at each annealing temp. Within the accuracy of ±5% the authors measure for both processes the same value for the diffusion coeff. The temp. dependence of the diffusion coeff. obeys an Arrhenius-law for all crystals, proving that the O diffusion in the rare earth RE 123 **superconductors** is a purely thermally activated process. The values for the activation energy show a scattering up to 30% and vary from 0.76 to 1.09 eV. There is neither a dependence of the activation energy on the central rare earth atom nor on different impurity levels.
IT **111590-96-6D**, Barium copper dysprosium oxide (Ba2Cu3DyO7), oxygen-deficient **111590-97-7D**, Barium copper erbium oxide (Ba2Cu3ErO7), oxygen-deficient
(oxygen diffusion in rare earth barium cuprates with different amts. of impurities)

RN 111590-96-6 HCA
CN Barium copper dysprosium oxide (Ba2Cu3DyO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Dy	1	7429-91-6

RN 111590-97-7 HCA
CN Barium copper erbium oxide (Ba2Cu3ErO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Er	1	7440-52-0
Cu	3	7440-50-8
Ba	2	7440-39-3

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 65
ST oxygen diffusion barium lanthanide cuprate **superconductor**
IT **Superconductors**
(cuprate; oxygen diffusion in rare earth barium cuprates with different amts. of impurities)
IT 7782-44-7, Oxygen, properties 109064-29-1D, Barium copper yttrium oxide (Ba2Cu3YO7), oxygen-deficient **111590-96-6D**, Barium copper dysprosium oxide (Ba2Cu3DyO7), oxygen-deficient **111590-97-7D**, Barium copper erbium oxide (Ba2Cu3ErO7), oxygen-deficient
(oxygen diffusion in rare earth barium cuprates with different amts. of impurities)
RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 5 OF 8 HCA COPYRIGHT 2007 ACS on STN
AN 128:199218 HCA Full-text
TI On the origin of the so-called fishtail effect in **single crystals** of the RE - 123 compounds (RE = Y, Er, Nd)
AU Erb, Andreas; Genoud, Jean-Yves; Dhalle, Marc; Marti, Frank; Walker, Eric; Flukiger, Rene
CS Departement de Physique de la Matiere Condensee, Universite de Geneve, Geneva, 1211/4, Switz.

SO Institute of Physics Conference Series (**1997**), 158(Applied Superconductivity 1997, Vol. 2), 1109-1112
CODEN: IPCSEP; ISSN: 0951-3248
PB Institute of Physics Publishing
DT Journal
LA English
AB We report on expts. performed on twinned crystals grown in the recently developed non reactive crucible material **BaZrO3.** Due to the very high purity (5 N) the expts. are not obscured by residual impurity effects. In YBa2Cu3O7-δ the so-called fishtail effect in the magnetization curves can be suppressed and re-established by appropriate annealing procedures with or without changing the overall oxygen content. Thus, only a locally altered distribution of the oxygen vacancies e.g. a clustering of the oxygen deficient regions must be responsible for this anomaly. For other rare earth systems addnl. complications occur due to inhomogeneities in the metal sublattice. Again, eliminating these microstructural inhomogeneities leads to the absence of the fishtail anomaly. Combining the influences of different origin on the crit. currents gives way to optimized properties.
IT **65107-47-3**, Barium copper lanthanum oxide
109457-22-9, Barium copper dysprosium oxide
109457-24-1, Barium copper europium oxide
(crit. temp. for different **single crystals** in dependence of the annealing temp.)
RN 65107-47-3 HCA
CN Barium copper lanthanum oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Cu	x	7440-50-8
Ba	x	7440-39-3
La	x	7439-91-0

RN 109457-22-9 HCA
CN Barium copper dysprosium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Cu	x	7440-50-8
Ba	x	7440-39-3
Dy	x	7429-91-6

RN 109457-24-1 HCA
CN Barium copper europium oxide (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
O	x	17778-80-2
Eu	x	7440-53-1
Cu	x	7440-50-8
Ba	x	7440-39-3

IT **111590-97-7D**, Barium copper erbium oxide (Ba2Cu3ErO7), oxygen-deficient **111591-04-9D**, Barium copper neodymium oxide (Ba2Cu3NdO7), oxygen-deficient
(origin of so-called fishtail effect in magnetization curves of **single crystals** RE - 123 compds. (RE = Y, Er, Nd))
RN 111590-97-7 HCA
CN Barium copper erbium oxide (Ba2Cu3ErO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Er	1	7440-52-0
Cu	3	7440-50-8
Ba	2	7440-39-3

RN 111591-04-9 HCA
CN Barium copper neodymium oxide (Ba2Cu3NdO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Nd	1	7440-00-8

IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(origin of so-called fishtail effect in magnetization curves of **single crystals** RE - 123 compds. (RE = Y, Er, Nd) deposited on)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2

Zr | 1 | 7440-67-7
Ba | 1 | 7440-39-3

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 77
ST cuprate **superconductor** magnetization curve fishtail effect; annealing temp cuprate **superconductor** magnetization curve; barium copper oxide rare earth substitution
IT **Superconductors**
(cuprate; origin of so-called fishtail effect in magnetization curves of **single crystals** RE - 123 compds. (RE = Y, Er, Nd))
IT Magnetization
Superconducting critical current density
Superconducting critical temperature
(origin of so-called fishtail effect in magnetization curves of **single crystals** RE - 123 compds. (RE = Y, Er, Nd))
IT Annealing
(temp.; origin of so-called fishtail effect in magnetization curves of **single crystals** RE - 123 compds. (RE = Y, Er, Nd))
IT **65107-47-3**, Barium copper lanthanum oxide
109457-22-9, Barium copper dysprosium oxide
109457-24-1, Barium copper europium oxide
(crit. temp. for different **single crystals** in dependence of the annealing temp.)
IT 109064-29-1D, Barium copper yttrium oxide (Ba2Cu3YO7), oxygen-deficient **111590-97-7D**, Barium copper erbium oxide (Ba2Cu3ErO7), oxygen-deficient **111591-04-9D**, Barium copper neodymium oxide (Ba2Cu3NdO7), oxygen-deficient 203632-92-2D, Barium copper erbium neodymium oxide (Ba2Cu3Er0.59Nd0.41O7), oxygen-deficient
(origin of so-called fishtail effect in magnetization curves of **single crystals** RE - 123 compds. (RE = Y, Er, Nd))
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(origin of so-called fishtail effect in magnetization curves of **single crystals** RE - 123 compds. (RE = Y, Er, Nd) deposited on)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 6 OF 8 HCA COPYRIGHT 2007 ACS on STN
AN 126:25530 HCA Full-text
TI Specific heat of **single crystalline**

PrBa2Cu3O7-δ in magnetic fields

AU Uma, S.; Schnelle, W.; Gmelin, E.; Rangarajan, G.; Erb, A.; Walker, E.; Fluekiger, R.

CS Max-Planck Institut fur Festkoerperforschung, Stuttgart, D-70569, Germany

SO Czechoslovak Journal of Physics (**1996**), 46(Suppl., Pt. S5, Proceedings of the 21st International Conference on Low Temperature Physics, 1996, Part S5), 2677-2678
CODEN: CZYPAO; ISSN: 0011-4626

PB Institute of Physics, Academy of Sciences of the Czech Republic

DT Journal

LA English

AB Low temp. sp. heat studies on contamination free **single crystals** of PrBa2Cu3O7-δ (PBCO) are reported in the temp. range 1.6-40K and in applied magnetic fields of H = OT, 2T, 5T and 7.5 T. The measurements were performed with the applied magnetic fields parallel and perpendicular to the c-axis. The high quality of the PBCO crystals grown in **BaZrO3** crucible is reflected in the obsd. sharp antiferromagnetic ordering peak at TN = 16.6 K. The shift of TN with magnetic field is found to follow a H2-dependence. The obsd. antiferromagnetic ordering of the Pr3+ ion is discussed in the framework of 3-dimensional ordering and compared with the previous reports on polycryst. samples.

IT **111776-14-8D**, Barium copper praseodymium oxide (Ba2Cu3PrO7), oxygen-deficient
(sp. heat and antiferromagnetic ordering of **single cryst.** PrBa2Cu3O7-δ **superconductor** in magnetic fields)

RN 111776-14-8 HCA

CN Barium copper praseodymium oxide (Ba2Cu3PrO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Pr	1	7440-10-0

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 69, 77

ST praseodymium barium cuprate **superconductor** sp heat

IT Entropy
(magnetic; sp. heat and antiferromagnetic ordering of **single cryst.** PrBa2Cu3O7-δ **superconductor** in magnetic fields)

IT Antiferromagnetic ordering
Heat capacity
Superconductivity
Superconductors

(sp. heat and antiferromagnetic ordering of **single cryst.** PrBa2Cu3O7-δ **superconductor** in magnetic fields)

IT **111776-14-8D**, Barium copper praseodymium oxide (Ba2Cu3PrO7), oxygen-deficient
(sp. heat and antiferromagnetic ordering of **single cryst.** PrBa2Cu3O7-δ **superconductor** in magnetic fields)

L32 ANSWER 7 OF 8 HCA COPYRIGHT 2007 ACS on STN
AN 124:275734 HCA Full-text
TI The use of **BaZrO3** crucibles in crystal growth of the high-Tc **superconductors.** Progress in crystal growth as well as in sample quality
AU Erb, A.; Walker, E.; Fluekiger, R.
CS Departement de Physique de la Matiere Condensee, Universite de Geneve 24, quai Ernest Ansermet, Geneva, 1211/4, Switz.
SO Physica C: Superconductivity (Amsterdam) (**1996**), 258(1&2), 9-20
CODEN: PHYCE6; ISSN: 0921-4534
PB Elsevier
DT Journal
LA English
AB Home-made **BaZrO3** crucibles were used as a crucible material for soln. growth of **single crystals** of REBa2Cu3O7-δ (RE = Y, Er, Dy, Pr) and of Y1-xPrxBa2Cu3O7- δ **single crystals** (0≤x≤1). This new crucible material does not react with the melts commonly used as flux. As a consequence, the compn. of the melt is not altered during crystal growth and the impurity content in the **single crystals** is much smaller than for crystals grown in other crucible materials. The absence of corrosion also makes the crystal growth far more efficient; thus it was worthwhile to grow crystals using high-purity (5N) starting materials, to further enhance their quality. The high quality of the 123 crystals grown in **BaZrO3** crucibles is reflected in their phys. properties. As an example, the 1st observation of the flux lattice with STM expts. on the 123 **superconductors** was performed on an uncleaved crystal grown in **BaZrO3** without any surface conditioning, thus revealing **superconducting** behavior up to the uppermost layer of the crystal. Another example is furnished by low-temp. sp. heat measurements: besides a very narrow **superconducting** transition, these measurements show the absence of the upturn usually attributed to flux inclusions and hence to magnetic ordering of the flux component BaCuO2. The quality of 123 **single crystals** was considerably improved by using **BaZrO3** crucibles.
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(properties of high-Tc **superconductors** grown using **BaZrO3** crucibles)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **111590-96-6D**, Barium copper dysprosium oxide (Ba2Cu3DyO7), oxygen-deficient **111590-97-7D**, Barium copper erbium oxide (Ba2Cu3ErO7), oxygen-deficient **111776-14-8D**, Barium copper praseodymium oxide (Ba2Cu3PrO7), oxygen-deficient
(properties of high-Tc **superconductors** grown using **BaZrO3** crucibles)

RN 111590-96-6 HCA
CN Barium copper dysprosium oxide (Ba2Cu3DyO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Dy	1	7429-91-6

RN 111590-97-7 HCA
CN Barium copper erbium oxide (Ba2Cu3ErO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Er	1	7440-52-0
Cu	3	7440-50-8
Ba	2	7440-39-3

RN 111776-14-8 HCA
CN Barium copper praseodymium oxide (Ba2Cu3PrO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Pr	1	7440-10-0

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 57, 75
ST barium zirconate crucible **superconductor** crystal growth;

rare earth cuprate **superconductor** crystal growth
IT Crucibles
Crystal growth
Heat capacity
Superconductors
(properties of high-Tc **superconductors** grown using **BaZrO3** crucibles)
IT Cuprates
(properties of high-Tc **superconductors** grown using **BaZrO3** crucibles)
IT **Superconductivity**
(crit. temp., properties of high-Tc **superconductors** grown using **BaZrO3** crucibles)
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(properties of high-Tc **superconductors** grown using **BaZrO3** crucibles)
IT 109064-29-1D, Barium copper yttrium oxide (Ba2Cu3YO7), oxygen-deficient 111147-68-3D, Barium copper praseodymium yttrium oxide (Ba2Cu3Pr0.2Y0.8O7), oxygen-deficient **111590-96-6D**, Barium copper dysprosium oxide (Ba2Cu3DyO7), oxygen-deficient **111590-97-7D**, Barium copper erbium oxide (Ba2Cu3ErO7), oxygen-deficient **111776-14-8D**, Barium copper praseodymium oxide (Ba2Cu3PrO7), oxygen-deficient 126941-55-7D, Barium copper praseodymium yttrium oxide (Ba2Cu3Pr0.58Y0.42O7), oxygen-deficient 175481-42-2D, Barium copper praseodymium yttrium oxide (Ba2Cu3Pr0.67Y0.33O7), oxygen-deficient
(properties of high-Tc **superconductors** grown using **BaZrO3** crucibles)

L32 ANSWER 8 OF 8 HCA COPYRIGHT 2007 ACS on STN
AN 123:71866 HCA Full-text
TI **BaZrO3**: the solution for the crucible corrosion problem during the **single crystal** growth of high-Tc **superconductors** REBa2Cu3O7-δ; RE = Y, Pr
AU Erb, A.; Walker, E.; Fluekiger, R.
CS Departement de Physique de la Matiere Condensee, Universite de Geneve, 24, quai Ernest Ansermet, Geneva, 1211/4, Switz.
SO Physica C: Superconductivity (Amsterdam) (**1995**), 245(3&4), 245-51
CODEN: PHYCE6; ISSN: 0921-4534
PB Elsevier
DT Journal
LA English
AB The authors report on the soln. growth of **single crystals** of YBa2Cu3O7-δ and PrBa2Cu3O7-δ in a new type of home-made crucible, made of **BaZrO3**, which has the advantage that it does not react with the occurring melts which are commonly used as a flux. These new crucibles have several advantages:

not only the crystals obtained after the growth expt. contain no impurities from the crucible material, but also an important problem is solved, e.g. the corrosion of the crucible does no longer change the compn. of the melt during the growth expt., thus avoiding uncontrollable growth conditions. Hence, due to this novel inert crucible material the use of more sophisticated crystal growth techniques such as top seeded soln. growth (TSSG) are now possible.

IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(barium zirconate crucibles for anticorrosive growth of barium copper rare earth oxide **superconductors**)
RN 12009-21-1 HCA
CN Barium zirconium oxide (BaZrO3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	1	7440-67-7
Ba	1	7440-39-3

IT **111776-14-8D**, Barium copper praseodymium oxide (Ba2Cu3PrO7), oxygen-deficient
(barium zirconate crucibles for anticorrosive growth of barium copper rare earth oxide **superconductors**)
RN 111776-14-8 HCA
CN Barium copper praseodymium oxide (Ba2Cu3PrO7) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Cu	3	7440-50-8
Ba	2	7440-39-3
Pr	1	7440-10-0

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 57, 75
ST barium zirconate crucible cuprate **superconductor** growth
IT Crucibles
Superconductors
(barium zirconate crucibles for anticorrosive growth of barium copper rare earth oxide **superconductors**)
IT **12009-21-1**, Barium zirconate (**BaZrO3**)
(barium zirconate crucibles for anticorrosive growth of barium copper rare earth oxide **superconductors**)
IT 109064-29-1D, Barium copper yttrium oxide (Ba2Cu3YO7), oxygen-deficient **111776-14-8D**, Barium copper praseodymium oxide (Ba2Cu3PrO7), oxygen-deficient

(barium zirconate crucibles for anticorrosive growth of barium copper rare earth oxide **superconductors**)